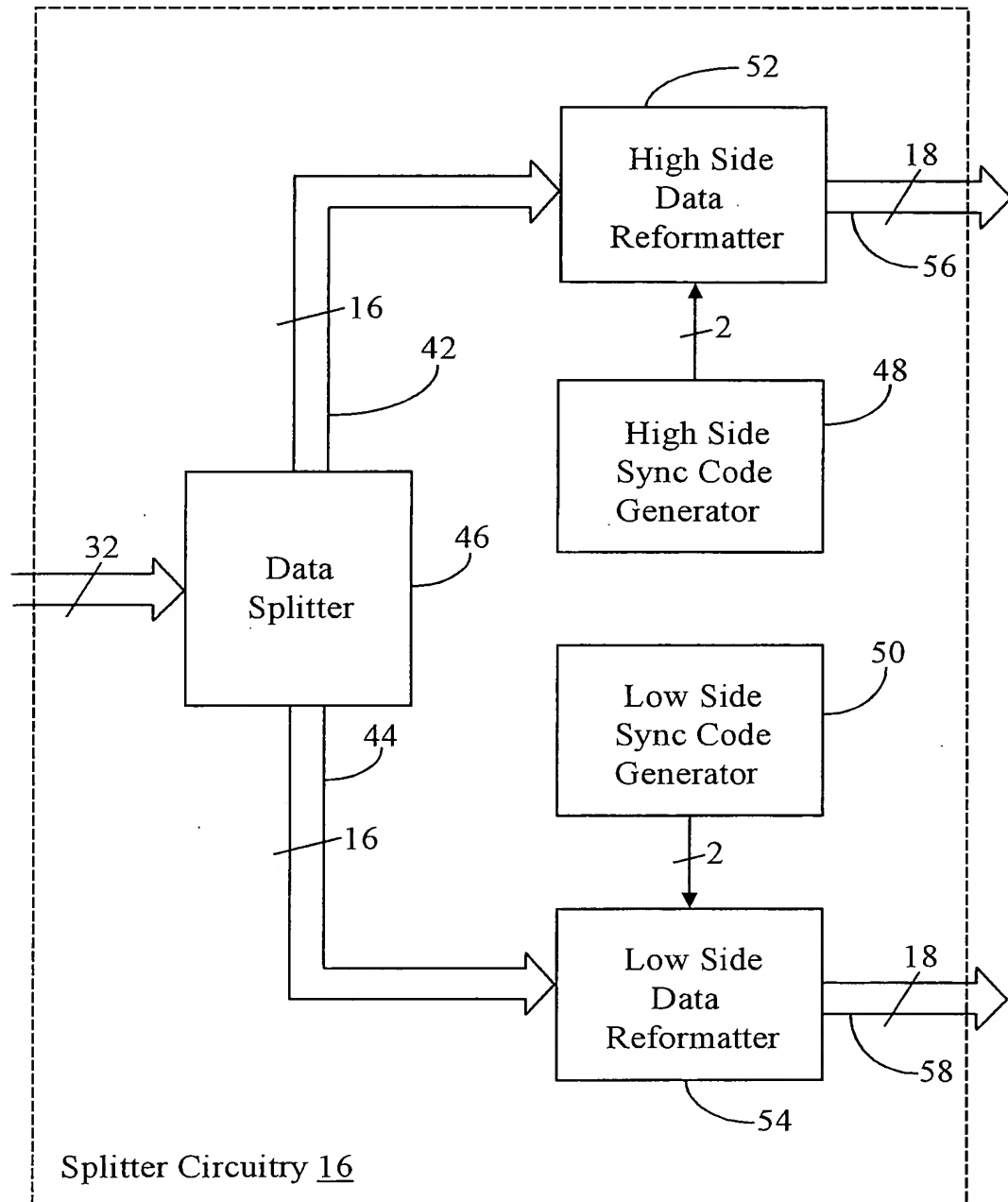
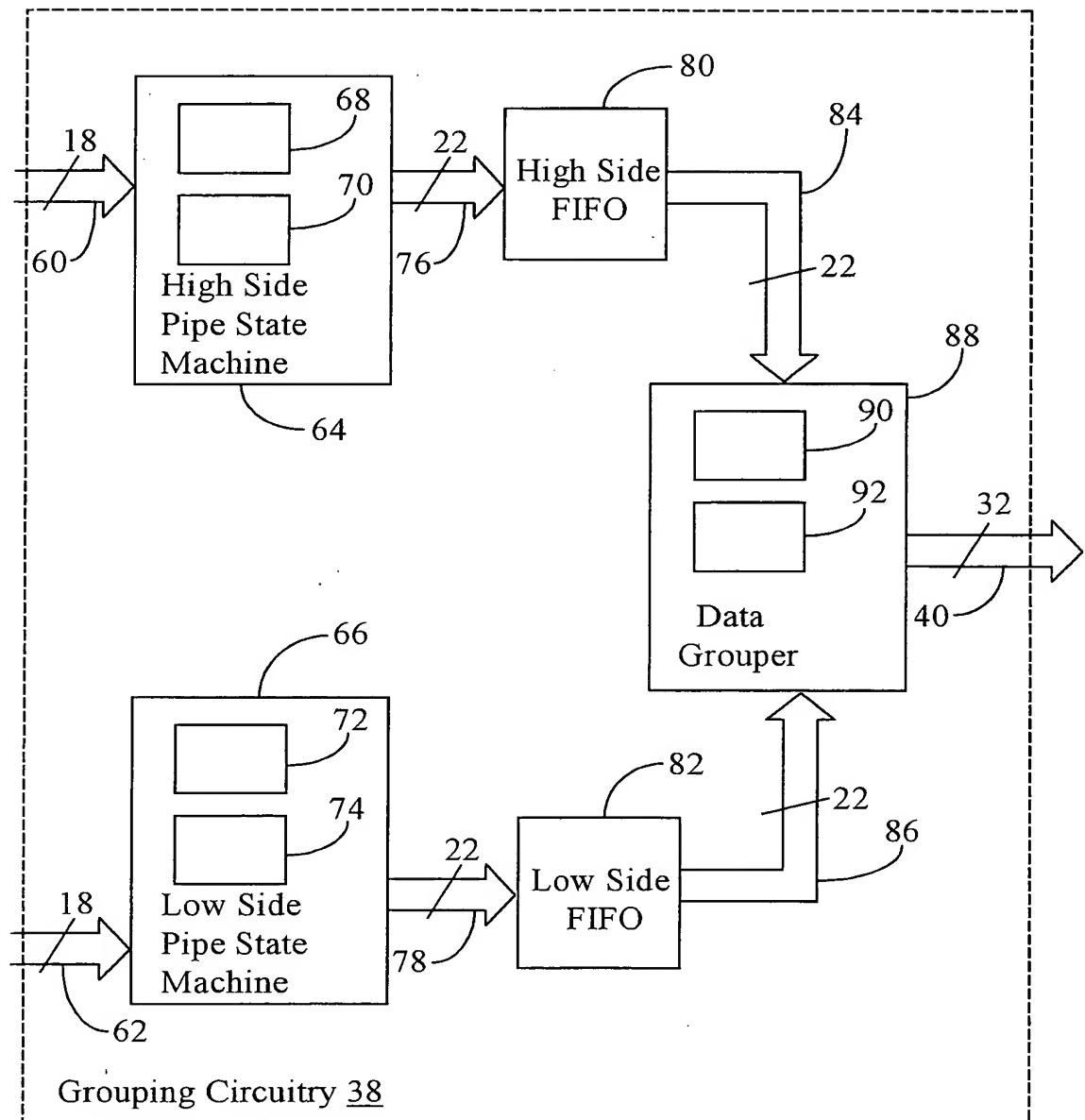


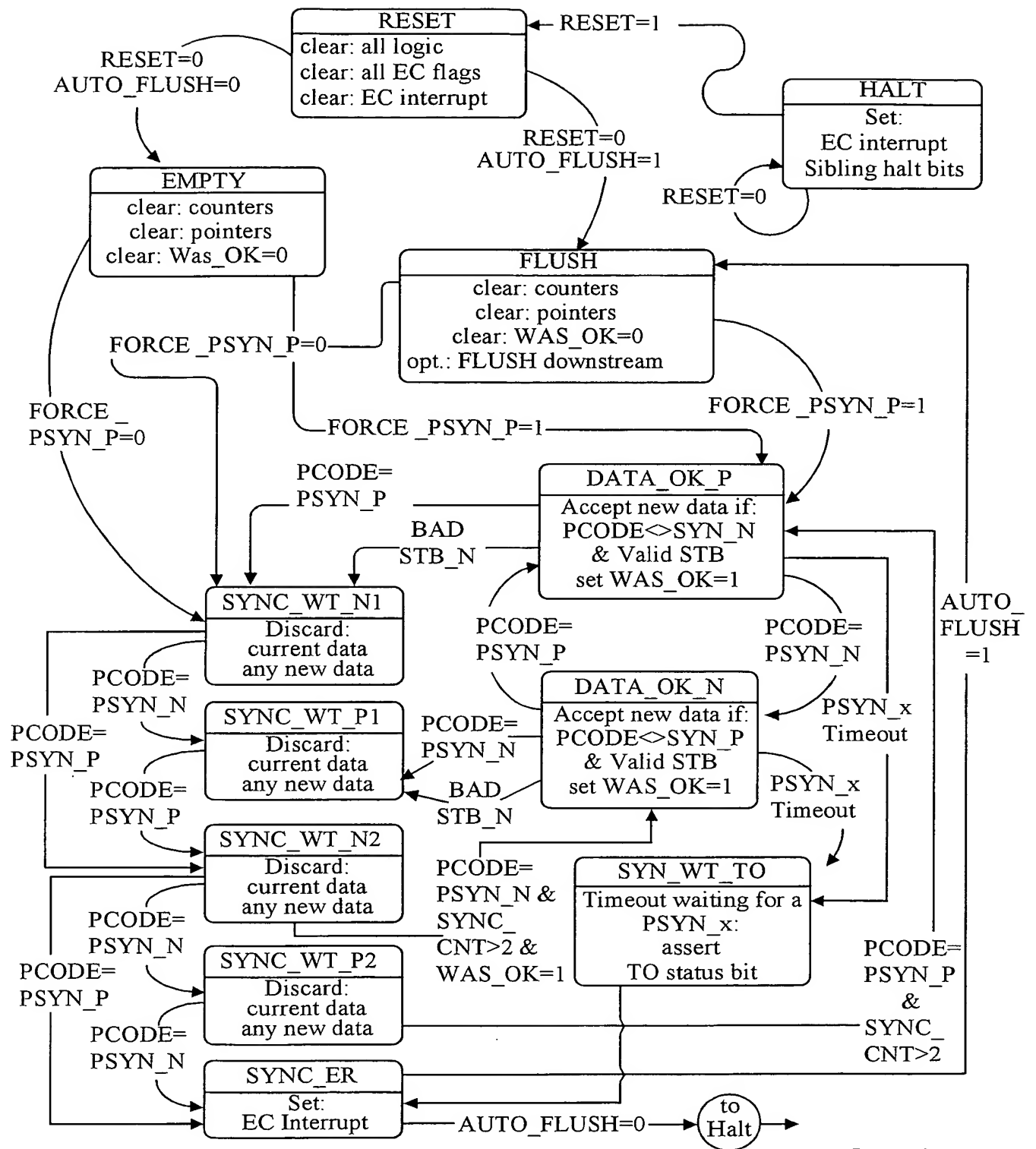
**Fig. 1**



**Fig. 2**



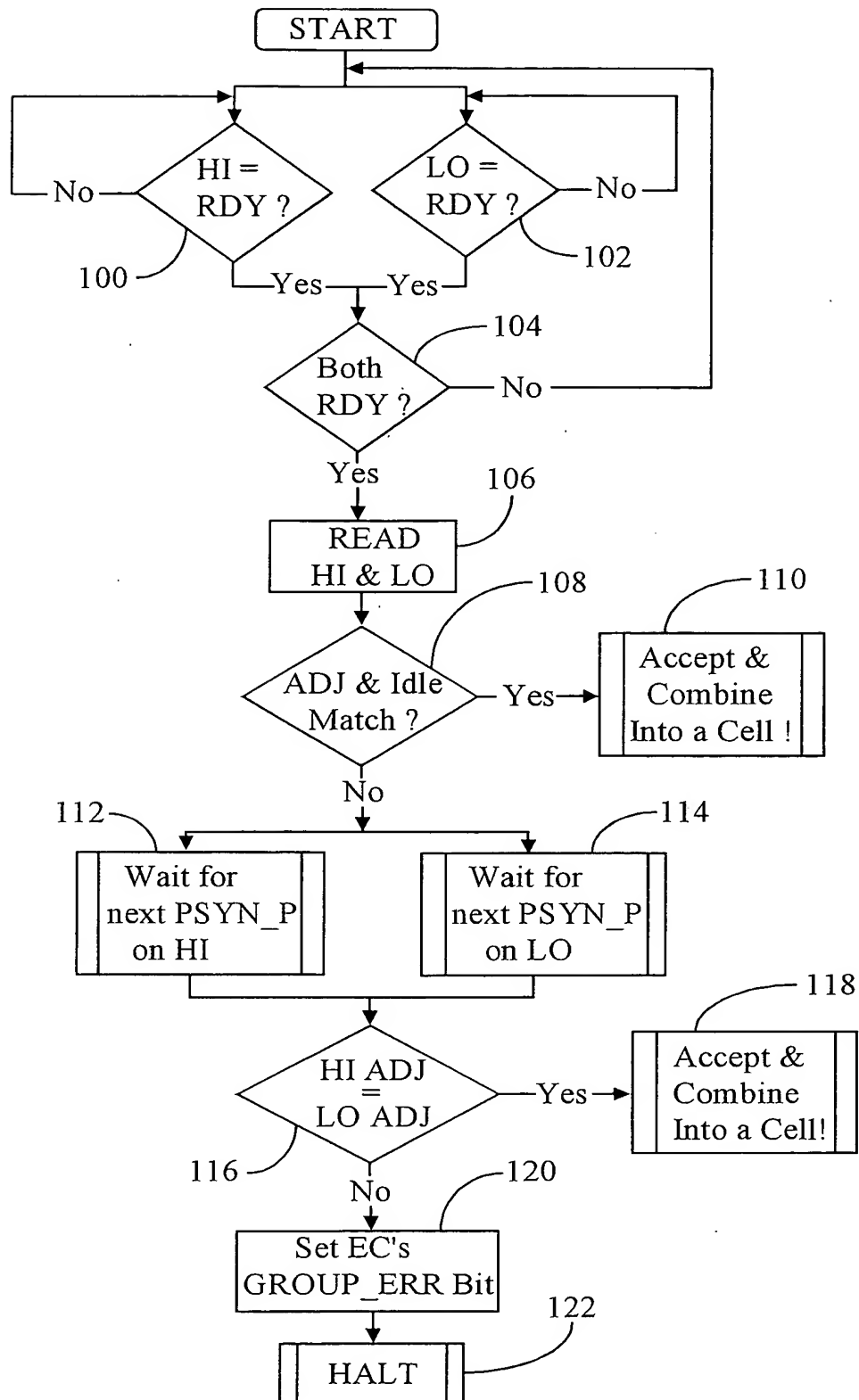
**Fig. 3**



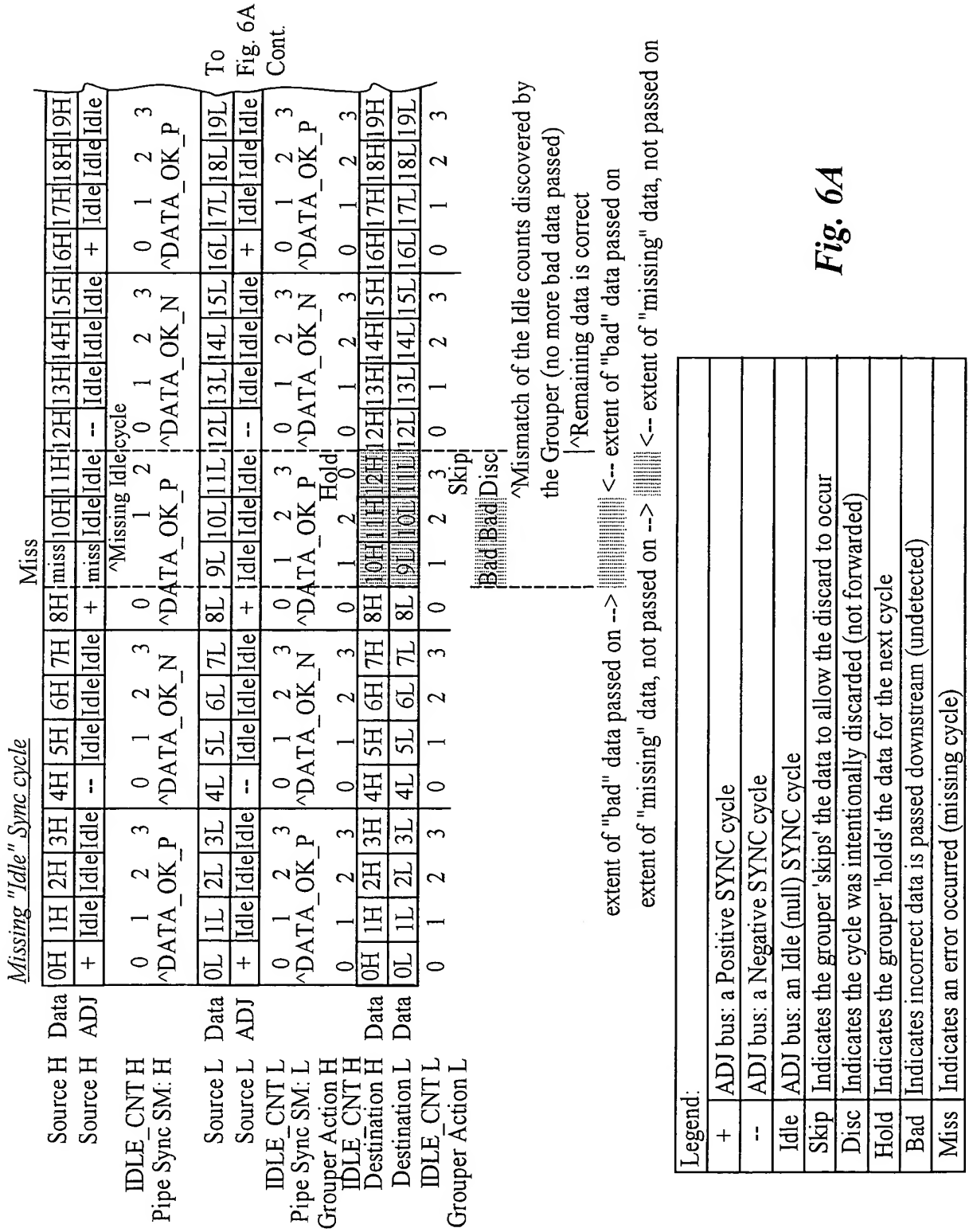
Pipe Sync State Machine

**Fig. 4**

Legend:
STATE NAME
Abbreviations:
WT = wait
ER = error
opt. = optional



**Fig. 5**

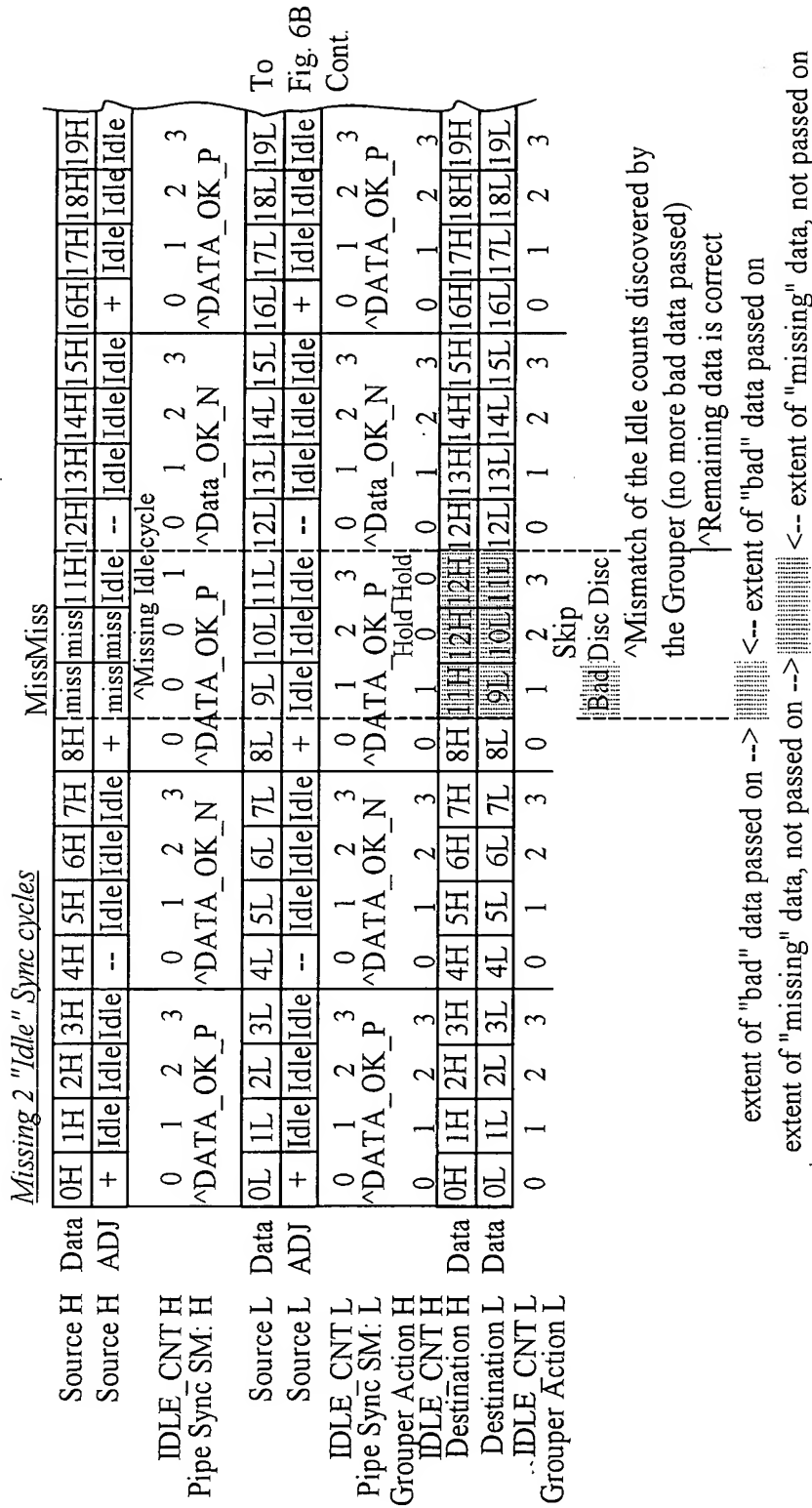


**Fig. 6A**

20H	21H	22H	23H	24H	25H	26H	27H	28H	29H	30H	31H
--	Idle	Idle	Idle	+	Idle	Idle	Idle	--	Idle	Idle	Idle
0	1	2	3	0	1	2	3	0	1	2	3
^DATA_OK_N				^DATA_OK_P				^DATA_OK_N			
20L	21L	22L	23L	24L	25L	26L	27L	28L	29L	30L	31L
--	Idle	Idle	Idle	+	Idle	Idle	Idle	--	Idle	Idle	Idle
0	1	2	3	0	1	2	3	0	1	2	3
^DATA_OK_N				^DATA_OK_P				^DATA_OK_N			
0	1	2	3	0	1	2	3	--	1	2	3
20H	21H	22H	23H	24H	25H	26H	27H	28H	29H	30H	31H
20L	21L	22L	23L	24L	25L	26L	27L	28L	29L	30L	31L
0	1	2	3	0	1	2	3	--	1	2	3

Cont. from  
Fig. 6A

*Fig. 6A Continued*



**Fig. 6B**

Legend:	
+	ADJ bus: a Positive SYNC cycle
--	ADJ bus: a Negative SYNC cycle
Idle	ADJ bus: an Idle (null) SYNC cycle
Skip	Indicates the grouper 'skips' the data to allow the discard to occur
Disc	Indicates the cycle was intentionally discarded (not forwarded)
Hold	Indicates the grouper 'holds' the data for the next cycle
Bad	Indicates incorrect data is passed downstream (undetected)
Miss	Indicates an error occurred (missing cycle)



Cont. from  
Fig. 6B

20H	21H	22H	23H	24H	25H	26H	27H	28H	29H	30H	31H
--	Idle	Idle	Idle	+	Idle	Idle	Idle	--	Idle	Idle	Idle
0	1	2	3	0	1	2	3	0	1	2	3
^DATA_OK_N				^DATA_OK_P				^DATA_OK_N			
20L	21L	22L	23L	24L	25L	26L	27L	28L	29L	30L	31L
--	Idle	Idle	Idle	+	Idle	Idle	Idle	--	Idle	Idle	Idle
0	1	2	3	0	1	2	3	0	1	2	3
^DATA_OK_N				^DATA_OK_P				^DATA_OK_N			
0	1	2	3	0	1	2	3	--	1	2	3
20H	21H	22H	23H	24H	25H	26H	27H	28H	29H	30H	31H
20L	21L	22L	23L	24L	25L	26L	27L	28L	29L	30L	31L
0	1	2	3	0	1	2	3	--	1	2	3

*Fig. 6B Continued*



20H	21H	22H	23H	24H	25H	26H	27H	28H	29H	30H	31H	
--	Idle	Idle	Idle	+	Idle	Idle	Idle	--	Idle	Idle	Idle	
^Sync Recovered												
3	3	3	3	0				1	2	3		
0	1	2	3	0	1	2	3	^Data_OK_N				
^SYNC_WT_P2												
20L	21L	22L	23L	24L	25L	26L	27L	28L	29L	30L	31L	
--	Idle	Idle	Idle	+	Idle	Idle	Idle	--	Idle	Idle	Idle	
0	1	2	3	0	1	2	3	0	1	2	3	
^DATA_OK_N												
^DATA_OK_P												
^DATA_OK_N												
Skip	Skip	Skip	Skip	24H	25H	26H	27H	28H	29H	30H	31H	
20L	21L	22L	23L	24L	25L	26L	27L	28L	29L	30L	31L	
Disc	Disc	Disc	Disc	^Grouper has seen one complete correct sequence, lets data pass.								
<---extent of "missing" data, not passed on												

Cont. from  
Fig. 6C

*Fig. 6C Continued*

# Missing "Negative" Sync cycle

Source H	0H	1H	2H	3H	Miss Bad Bad Bad Disc Disc Disc Disc Disc Disc Disc Disc															
Source H	+	Idle	Idle	Idle	5H	6H	7H	8H	9H	10H	11H	12H	13H	14H	15H	16H	17H	18H	19H	
SYNC_CNT H	^Missing Negative cycle																			
IDLE_CNT H	0	1	2	3	3	4	5	6	1	1	1	2	2	2	2	3	3	3	3	
Pipe Sync SM: H	^DATA_OK_P				^Missing Negative Sync discovered															
Source L	0L	1L	2L	3L	4L	5L	6L	7L	8L	9L	10L	11L	12L	13L	14L	15L	16L	17L	18L	19L
Source L	+	Idle	Idle	Idle	--	Idle	Idle	Idle	+	Idle	Idle	Idle	--	Idle	Idle	Idle	+	Idle	Idle	Idle
IDLE_CNT L	0	1	2	3	0	1	2	3	0	1	2	3	0	1	2	3	0	1	2	3
Pipe Sync SM: L	^DATA_OK_P				^DATA_OK_N															
Destination H	0H	1H	2H	3H	5H	6H	7H	8H	Skip	Skip	Skip	Skip	Skip	Skip	Skip	Skip	Skip	Skip	Skip	Skip
Destination L	0L	1L	2L	3L	4L	5L	6L	7L	8L	9L	10L	11L	12L	13L	14L	15L	16L	17L	18L	19L
Disc Disc																				

extent of "missed" data, not passed on -->

Legend:	
+	ADJ bus: a Positive SYNC cycle
--	ADJ bus: a Negative SYNC cycle
Idle	ADJ bus: an Idle (null) SYNC cycle
Skip	Indicates the grouper 'skips' the data to allow the discard to occur
Disc	Indicates the cycle was intentionally discarded (not forwarded)
Hold	Indicates the grouper 'holds' the data for the next cycle
Bad	Indicates incorrect data is passed downstream (undetected)
Miss	Indicates an error occurred (missing cycle)

Fig. 6D

20H	21H	22H	23H	24H	25H	26H	27H	28H	29H	30H	31H	32H	33H	34H	35H
--	Idle	Idle	Idle	+	Idle	Idle	Idle	--	Idle	Idle	Idle	+	Idle	Idle	Idle
^Sync recovered															
0	1	2	3	0	1	2	3	0	1	2	3	0	1	2	3
^DATA_OK_N				^DATA_OK_P				^DATA_OK_N				^DATA_OK_P			
20L	21L	22L	23L	24L	25L	26L	27L	28L	29L	30L	31L	32L	33L	34L	35L
--	Idle	Idle	Idle	+	Idle	Idle	Idle	--	Idle	Idle	Idle	+	Idle	Idle	Idle
0	1	2	3	0	1	2	3	0	1	2	3	0	1	2	3
^DATA_OK_N				^DATA_OK_P				^DATA_OK_N				^DATA_OK_P			
20H	21H	22H	23H	24H	25H	26H	27H	28H	29H	30H	31H	32H	33H	34H	35H
20L	21L	22L	23L	24L	25L	26L	27L	28L	29L	30L	31L	32L	33L	34L	35L
^Remaining data is now correct															
<--extent of "missing" data, not passed on															

Cont. from  
Fig. 6D

**Fig. 6D Continued**